

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SCOTT E. MOORE

Appeal No. 2002-1416
Application No. 09/146,519

HEARD: May 08, 2003

Before HAIRSTON, KRASS, and GROSS, Administrative Patent Judges.
GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 2 through 9, 11 through 15, and 18 through 20. Claims 1, 10, and 21 through 43 have been canceled. Claims 16 and 17 have been withdrawn from consideration.

Appellant's invention relates to a method of making a semiconductor product. The method includes the step of applying an explosive force to a conductive layer to move it into an opening in the semiconductor wafer. Claim 18 is illustrative of the claimed invention and reads as follows:

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18. A method of filling a surface discontinuity in a semiconductor product, said method comprising the steps of:

depositing conductive material over said surface discontinuity;

subsequently, applying an explosive force to said conductive material; and

deforming said conductive material into said surface discontinuity, and wherein the deformation of said conductive material into said surface discontinuity is caused by the application of said explosive force.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Cranston	3,737,986	Jun. 12, 1973
Dobson	5,527,561	Jun. 18, 1996
Jeffryes et al. (Jeffryes)	5,575,850	Nov. 19, 1996

Claims 2 through 9, 11, and 18 through 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Dobson in view of Cranston.

Claims 12 through 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Dobson in view of Cranston and Jeffryes.

Reference is made to the Examiner's Answer (Paper No. 20, mailed March 11, 2002) for the examiner's complete reasoning in support of the rejections, and to appellant's Brief (Paper No. 19, filed December 26, 2001) and Reply Brief (Paper No. 22, filed May 13, 2002) for appellant's arguments thereagainst.

OPINION

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by appellant and the examiner. As a consequence of our review, we will reverse the obviousness rejections of claims 2 through 9, 11 through 15, and 18 through 20.

Each of independent claims 2, 11, 14, 15, and 18 recites applying "an explosive force" to either a conductive or a malleable material. Appellant defines "explosive force" in the specification (page 8, lines 11-14) as "any force characterized by high energy waves of the type produced by explosions." Thus, the claims all require the type of force that would be characterized by high energy waves as those produced by explosions.

Dobson discloses a method of filling holes in a semiconductor wafer by subjecting the filling material to elevated pressure and temperature sufficient to cause the layer to deform. Nowhere does Dobson disclose using explosive forces or combustion. Dobson states (column 3, lines 61-62) that "inert or reactive gases may be used to create the high pressure." Dobson further explains (column 7, lines 41-45) that the wafer

and layers "may be subjected to suitably controlled pressures" by filling the pressure vessel with gas and (column 6, lines 21-23) that the pressure must be maintained for a "sufficiently long" time. As pointed out by appellant (Brief, page 6), an explosive force is a brief, high velocity force, not a controlled "sufficiently long" pressure.

The examiner asserts (Answer, page 3) that the high pressures and the use of reactive gases in Dobson indicate that the force obtained by Dobson "would correspond to an explosive force." However, high pressure does not require an explosive force, and Dobson does not suggest that the reactive gases explode.

The examiner states that the explosive force is "inherent in Dobson." However, the examiner has failed to provide any evidence that the explosive force is inevitable in Dobson. As explained in ***Continental Can Co., U.S.A. v. Monsanto Co.***, 948 F.2d 1264, 1269, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991) and reproduced in ***Finnigan Corp. v. U.S. ITC***, 180 F.3d 1354, 1365, 51 USPQ2d 1001, 1009 (Fed. Cir. 1999), "Inherency, however, may not be established by probabilities or possibilities. The mere

fact that a certain thing may result from a given set of circumstances is not sufficient." High pressures clearly can occur without an explosion, and, therefore, explosive forces are not inherent in Dobson's method.

The examiner also contends (Answer, page 3) that Cranston renders obvious the use of an explosive force in Dobson's method. However, Cranston discloses using an explosive force for bonding two work pieces together, not for filling a hole in the semiconductor wafer. We find no suggestion in Cranston to use such explosive forces for moving material to fill holes or voids. Accordingly, as the examiner has not established a ***prima facie*** case of obviousness, we cannot sustain the rejection of independent claims 2, 11, 14, 15, and 18 and their dependents, claims 3 through 9, 19, and 20.

As to claims 12 through 15, the examiner adds Jeffryes to the primary combination of Dobson and Cranston. Jeffryes, like Dobson, discloses maintaining a high temperature and pressure for a sufficient time. Jeffryes does not suggest using an explosive force. Consequently, Jeffryes fails to cure the deficiencies in the combination of Dobson and Cranston, so we cannot sustain the obviousness rejection of claims 12 through 15.

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CONCLUSION

The decision of the examiner rejecting claims 2 through 9, 11 through 15, and 18 through 20 under 35 U.S.C. § 103 is reversed.

REVERSED

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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ERROL A. KRASS)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS
)	AND
)	INTERFERENCES
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)	
ANITA PELLMAN GROSS)	
Administrative Patent Judge)	

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